CLAIMS

What is claimed is:

1) A computer system operation method for use with a CAD system in modeling objects, said method providing a means for identifying geometric cells of a model, the method comprising:

receiving input comprising one or more constraints relating to cell information;

for each constraint, determining whether the cell meets the requirement of the constraint; and

generating a list of cells meeting the requirements of the constraints.

2) The computer system operation method of claim 1, wherein the constraints are chosen from a group comprising:

a) constraints relating to cell dimension;

b) constraints relating to the topology of a cell;

c) constraints relating to the history of the model evolution;

d) constraints relating to specific attributes of a cell; and

e) constraints relating to geometrical indications of a cell.

3) A CAD/CAM apparatus comprising:

an input device;

a central processing unit; and

a display device;

wherein the central processing unit runs an application program comprising code for:

displaying a representation of a model;

receiving input comprising one or more constraints relating to cell information of the model;
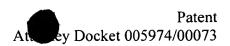
for each constraint, determining which cells of the model meet the requirement of the constraint; and

generating a list of cells meeting all of the requirements of the constraints.

4) The CAD/CAM apparatus of claim 3, wherein the application program processes constraints chosen from a group comprising:
   a) constraints relating to cell dimension;
   b) constraints relating to the topology of a cell;
   c) constraints relating to the history of the model evolution;
   d) constraints relating to specific attributes of a cell; and
   e) constraints relating to geometrical indications of a cell.

5) A computer data signal embodied in a digital data stream comprising data representing the identity of one or more geometric cells of a model, wherein said data stream is generated by a system operating according to a method comprising:
   receiving input comprising one or more constraints relating to cell information;
   for each constraint, determining which cells of the model meet the requirement of the constraint; and
   generating a list of cells meeting all of the requirements of the constraints.

6) The computer data signal embodied in a digital data stream of claim 5, wherein said constraints used in said method are chosen from a group comprising:
   a) constraints relating to cell dimension;
   b) constraints relating to the topology of a cell;
   c) constraints relating to the history of the model evolution;
   d) constraints relating to specific attributes of a cell; and
   e) constraints relating to geometrical indications of a cell.

7) Computer executable code stored on a computer readable medium, the code comprising means for causing a CAD computer system to perform a method providing a means for identifying geometric cells of a model, the method comprising:
   receiving input comprising one or more constraints relating to cell information;

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for each constraint, determining which cells of the model meet the requirement of the constraint; and

generating a list of cells meeting all of the requirements of the constraints.

8)   Computer executable code stored on a computer readable medium according to claim 7, wherein said constraints used in said method are chosen from a group comprising:

a)   constraints relating to cell dimension;

b)   constraints relating to the topology of a cell;

c)   constraints relating to the history of the model evolution;

d)   constraints relating to specific attributes of a cell; and

e)   constraints relating to geometrical indications of a cell.

9)   A computer system operation method for use with a CAD system in modeling objects, said method providing a means for identifying geometric cells of a model, the method comprising:

a) receiving input comprising one or more constraints relating to cell information;

b) selecting the first constraint of said input and identifying the components of the CAD system that must be accessed to find geometric cells meeting the requirements of the constraint;

c) searching the cells of the model and retaining as a subset only the cells that meet the requirement of the first constraint of said input;

d) selecting the next constraint of said input and identifying the components of the CAD system that must be accessed to find geometric cells meeting the requirements of said next constraint;

e) searching the subset of cells and retaining in the subset only the cells that meet the requirement of said next constraint of said input; and

f) repeating steps d) and e) for each of the remaining constraints in said input.

10) The computer system operation method of claim 9, wherein the constraints are chosen from a group comprising:

a) constraints relating to cell dimension;

b) constraints relating to the topology of a cell;

c) constraints relating to the history of the model evolution;

d) constraints relating to specific attributes of a cell; and

e) constraints relating to geometrical indications of a cell.

11) A CAD apparatus comprising:

an input device; and

a central processing unit;

wherein the central processing unit runs an application program comprising code for:

a) receiving input comprising one or more constraints relating to cell information of a model;

b) selecting the first constraint of said input and identifying the components of the CAD system that must be accessed to find geometric cells meeting the requirements of the constraint;

c) searching the cells of the model and retaining as a subset only the cells that meet the requirement of the first constraint of said input;

d) selecting the next constraint of said input and identifying the components of the CAD system that must be accessed to find geometric cells meeting the requirements of said next constraint;

e) searching the subset of cells and retaining in the subset only the cells that meet the requirement of said next constraint of said input; and

f) repeating steps d) and e) for each of the remaining constraints in said input.

12) The CAD apparatus of claim 11, wherein the application program processes constraints chosen from a group comprising:

a) constraints relating to cell dimension;

b) constraints relating to the topology of a cell;

c) constraints relating to the history of the model evolution;

d) constraints relating to specific attributes of a cell; and

e) constraints relating to geometrical indications of a cell.

13) A computer data signal embodied in a digital data stream comprising data representing the identity of one or more geometric cells of a model, wherein said data stream is generated by a system operating according to a method comprising:

a) receiving input comprising one or more constraints relating to cell information;

b) selecting the first constraint of said input and identifying the components of the CAD system that must be accessed to find geometric cells meeting the requirements of the constraint;

c) searching the cells of the model and retaining as a subset only the cells that meet the requirement of the first constraint of said input;

d) selecting the next constraint of said input and identifying the components of the CAD system that must be accessed to find geometric cells meeting the requirements of said next constraint;

e) searching the subset of cells and retaining in the subset only the cells that meet the requirement of said next constraint of said input; and

f) repeating steps d) and e) for each of the remaining constraints in said input.

14) The computer data signal embodied in a digital data stream of claim 13, wherein said constraints are chosen from a group comprising:

a) constraints relating to cell dimension;

b) constraints relating to the topology of a cell;

c) constraints relating to the history of the model evolution;

d) constraints relating to specific attributes of a cell; and

e) constraints relating to geometrical indications of a cell.

15) Computer executable code stored on a computer readable medium, the code comprising means for causing a CAD computer system to perform a method

providing a means for identifying geometric cells of a model, the method comprising:

a) receiving input comprising one or more constraints relating to cell information;

b) selecting the first constraint of said input and identifying the components of the CAD system that must be accessed to find geometric cells meeting the requirements of the constraint;

c) searching the cells of the model and retaining as a subset only the cells that meet the requirement of the first constraint of said input;

d) selecting the next constraint of said input and identifying the components of the CAD system that must be accessed to find geometric cells meeting the requirements of said next constraint;

e) searching the subset of cells and retaining in the subset only the cells that meet the requirement of said next constraint of said input; and

f) repeating steps d) and e) for each of the remaining constraints in said input.

16)   Computer executable code stored on a computer readable medium according to claim 15, wherein said constraints used in said method are chosen from a group comprising:

a) constraints relating to cell dimension;

b) constraints relating to the topology of a cell;

c) constraints relating to the history of the model evolution;

d) constraints relating to specific attributes of a cell; and

e) constraints relating to geometrical indications of a cell.

17)   A computer system operation method for use with a CAD system in modeling objects, said method providing a means for specifying geometric cells of a model that a user wishes to be a target for modification or manipulation, the method comprising specifying one or more constraints chosen from the group comprising:

a) constraints relating to cell dimension;

b) constraints relating to the topology of a cell;

c) constraints relating to the history of the model evolution;

d) constraints relating to specific attributes of a cell; and

e) constraints relating to geometrical indications of a cell.

18) A computer system operation method for use with a CAD system in modeling objects, said method providing a means for identifying geometric cells of a model meeting the requirement of one or more constraints of a cell descriptor, the method comprising:

determining for each constraint of said cell descriptor those components of the CAD system that must be accessed to find geometric cells meeting the requirements of the constraint; and

identifying a list of geometric cells that meet the requirements of all of the constraints of said input.

19) A computer system operation method for use with a CAD system in modeling objects, said method providing a means for defining three dimensional objects using a textual description, the method comprising:

receiving textual input specifying one or more pre-defined geometric parts, and the location and size of such parts;

generating geometric cell information for such parts;

receiving input comprising one or more constraints relating to the cell information of such parts;

for each constraint, determining whether the cells of such parts meet the requirements of the constraint; and

generating a list of cells meeting the requirements of the constraints.

20) The computer system operation method of claim 19, wherein the constraints are chosen from a group comprising:

a) constraints relating to cell dimension;

b) constraints relating to the topology of a cell;

c) constraints relating to the history of the model evolution;

d)   constraints relating to specific attributes of a cell; and

e)   constraints relating to geometrical indications of a cell.

21)   Computer executable code stored on a computer readable medium, the code
comprising means for causing a CAD computer system to perform a method
providing means for defining three dimensional objects using a textual
description, the method comprising:

receiving textual input specifying one or more pre-defined geometric parts, and
the location and size of such parts;

generating geometric cell information for such parts;

receiving input comprising one or more constraints relating to the cell information
of such parts;

for each constraint, determining whether the cells of such parts meet the
requirements of the constraint; and

generating a list of cells meeting the requirements of the constraints.

22)   Computer executable code stored on a computer readable medium according to
claim 21, wherein said constraints used in said method are chosen from a group
comprising:

a)   constraints relating to cell dimension;

b)   constraints relating to the topology of a cell;

c)   constraints relating to the history of the model evolution;

d)   constraints relating to specific attributes of a cell; and

e)   constraints relating to geometrical indications of a cell.

23)   A method of identifying geometric cells in a CAD/CAM system, the method
comprising the following steps:

creating a set of scripting rules for describing one or more characteristics of
geometrical cells in said CAD/CAM system;

receiving a user script input describing one or more characteristics of the
geometrical cells to be identified, said user input using said set of scripting rules;

interpreting said user input for translating said described characteristics into one
or more cell selecting commands;

selecting the cells that meet all the described characteristics, using said cell
selecting commands.

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